



Driving Decision Support Using New Technology and Interactive NWS

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Outline

- Consumer trends and statistics
- How does the NWS fit in?
 - The current NWS
 - The modern customer
 - Challenges
 - Opportunities
- Interactive NWS
 - Services and technologies
 - Demo
 - Technical issues
 - Future plans



Weather Consumer Trends

From: The Private Sector in Meteorology – The Next Ten Years, Maria A. Pirone, Atmospheric and Environmental Research, Inc., 2008

Over the last ten years the fastest growing (weather) market segment was by far the consumer market. This list is just a few of the trends that have helped shape this:

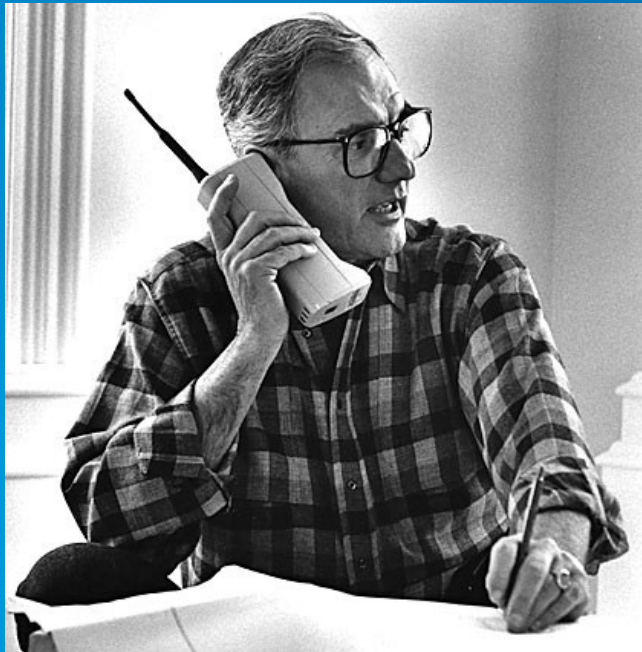
- Highly mobile society
- Need for instant access to information
- A generation of weather savvy professionals
- Public awareness of disaster impacts
- Consumer accessibility to technology
- Higher expectations
 - Demand for more local weather
 - Demand for better forecasts
- Active lifestyles
- Population growth along the weather sensitive coastlines



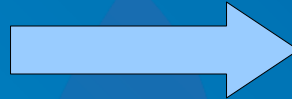
Mobile Consumer Statistics

- U.S. wireless penetration reaches 86%
- Statistics for January – June 2008:
 - U.S. subscribers totaled 262 million
 - Wireless data revenue up 40% to \$14.8 billion
 - data = 20% of all US wireless service
 - 15x NWS Budget for FY2009 (\$930.7M)
 - Voice and data minutes totaled 1.2 trillion (up 10.9%)
- Americans let their fingers do the talking
 - Wireless customers in the U.S. sent 75 billion text messages in June 2008, with multimedia messaging totaling 5.6 billion in the first half of the year.
- Google search for “Mobile Weather” returns 1,220,000 hits

Then and Now



1983 - Motorola DynaTAC handset weighed 2 1/2 pounds and retailed for \$3,995



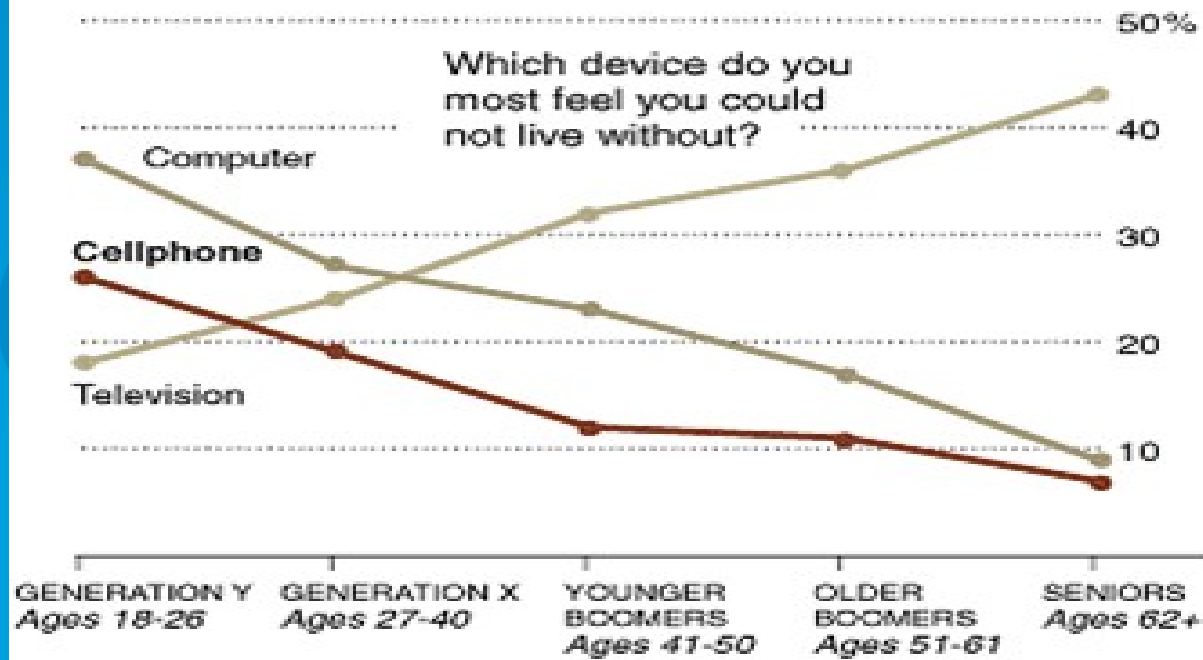
2008 – Apple iPhone 3G weighs 4.7 ounces and retails for \$199



A Look at the Next Generation

Can't Live Without It

Cellphones rank higher than television in the 18-to-26 age group — and media executives are hoping that it will have a large appetite for mobile video content.



Source: Forrester Research

The New York Times



A Look at the Next Generation

- Survey Responses of US teens 13-19 (September 2008)
 - 57% agree or somewhat agree that the cell phone has improved their quality of life
 - 41% are concerned about privacy and security issues when using mobile phones
 - 57% of Smartphone users and 29% of regular cell phone users said they carry their cell phone because it is how they stay connected to their "world"
 - Overall a teenager's cell phone ranked 2nd only to clothing in determining their social status
 - 42% of teenagers said they could text message blindfolded!
 - The #1 reason why teens liked text messaging was because it allowed them to multitask
 - 66% want cell phones to provide the freedom to get an education from any location on earth
 - 28% of teens are browsing the web on their cell phones
 - 59% of teens are willing to provide their profile information to businesses that advertise on cell phones!
 - 46% of children 8-12 years old own a phone



How Does the NWS Fit In?

- The current NWS
 - Product-driven
 - Pre-defined set of products
 - Pre-defined warning thresholds
 - One way communication
 - NWS-centric
 - NWS regions
 - WFOs
 - Zones and counties
 - Product dissemination
 - Web
 - NOAA Weather Radio
 - Weather Wire
 - EAS

SYSTEM...HOWEVER...RAIN WILL CHANGE
SNOWFALL POSSIBLE...ESPECIALLY DURING
HEAVIEST SNOWS WILL BE RESTRICTED
PARTICULARLY OVER AREAS OF THE WESTERN
HILL PLATEAU REGIONS OF CENTRAL NE

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...WINTER STORM WARNING IN EFFECT
WEDNESDAY...

How Does the NWS Fit In?

- The Modern Customer

- Becoming less tolerant of:
 - Adverse weather conditions
 - Incorrect forecasts

- Uses new technology

- GIS
- Mobile phones and computers
- Web 2.0

- Expects information that is tailored to their own needs.

- Is responsible for the well being of others





Challenges

- We crank out products, but how useful are they to the customer?
 - Content
 - Format
 - Medium
 - Existence
- Internal NWS constructs (examples: WFOs, zone numbers, etc.) are prevalent in our products, but not necessarily meaningful to customers.



Challenges cont.

- Our means of dissemination are becoming outdated.
 - Weather Wire – Very few users
 - Weather Radio – Is used some, but not very popular with younger generations.
 - Web – Good web presence, but it needs updating
 - EAS – Works if you catch the customer, over-warns
- Change is slow in the government



Opportunities

- How do we address the mentioned challenges?
- What should the role of the NWS be in the coming years?



Opportunities

- How do we address the mentioned challenges?
- What should the role of the NWS be in the coming years?
- One answer:
 - Using technology to improve decision support to community decision makers during the anticipation of, response to, and recovery from high impact events.



Interactive NWS (iNWS)

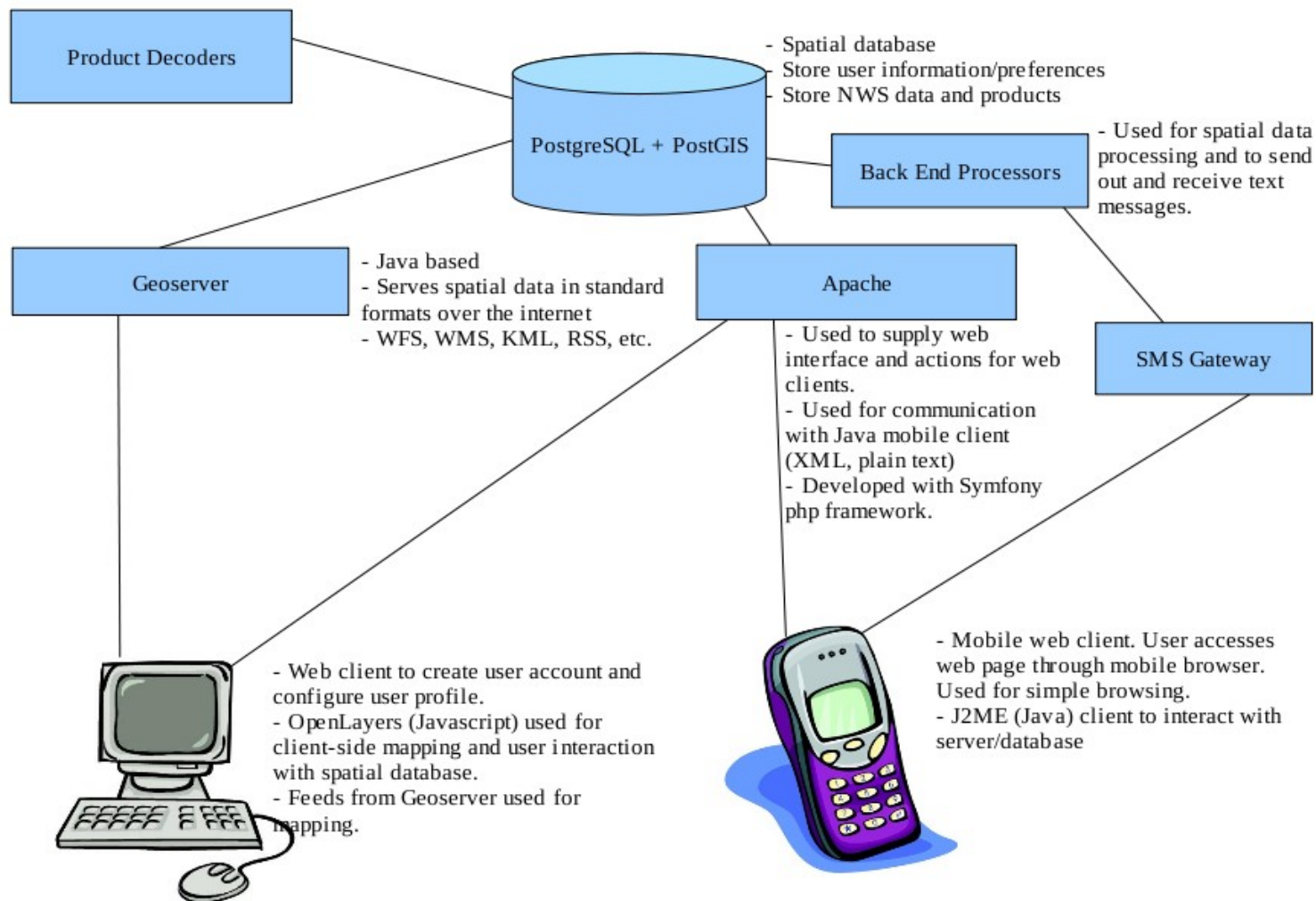
- Using new technology to develop and serve interactive and user-driven content.
 - Mobile
 - Web 2.0
 - GIS
 - Chat
 - Online meetings
- Open source software (with some exceptions)
- Open standards - most important
- Designed for the end user
- Targeting community decision makers (emergency managers, government officials, etc.)



iNWS Services

- **iNWS SMS** – Text message alerts of NWS watches, warnings, and advisories.
- **iNWS Mobile** – Mobile Java application for browsing weather data and configuring iNWS SMS.
- **NWSChat to SMS** – Adds ability for forecasters to send text messages to others from chat rooms.
- **iNWS Mobile Web** – Weather data formatted for mobile phone web browsers.
- **iCWSU** – Aviation weather data formatted for mobile phone web browsers.

iNWS Design



SSD High-Availability Blade Servers

Linux Virtual Server (LVS)



Virtual IP Address (VIP)

Linux Director A
HA heartbeat
LVS daemon

Linux Director B
HA heartbeat
LVS daemon

Auto-failover of
LVS management

Web Server A
NWS Interactive

Web Server B
NWS Interactive

VIP : port 80

Pgpool Server A
postgresql db
manager

Pgpool Server B
postgresql db
manager

Database Synchronization
and auto-failover of
db management

VIP : port 5432

pgsql A
database

pgsql B
database

LVS System Provides Performance and Reliability

- Intelligent load balanced services
- Direct outbound routing / no proxy
- Auto-detects and removes failed systems
- Transparent maintenance and upgrades
- Scalable: easy to add systems and services
- Automated status monitoring and alerts
- Back-end systems remain inaccessible to the public

Demo



interactiveNWS

home • products • news • my iNWS • logout • contact

Welcome, Aaron Sutula

home • logout

Follow the steps at the bottom of the page to create your alert area

Step 2: Create your custom alert area using the tools provided below

Do it all in three easy steps

1. Move and zoom the map to the location you would like to draw your alert area.
2. Create your alert area using one of the three options below.



Technical Challenges

- We must keep up with emerging technologies to stay relevant
- There is no standard mobile platform to develop for – the market will resolve this
- User driven content and map data must be scalable
- Customer feedback is necessary to develop useful interactive products (eg. RPP in early stages of GFE)



Future Plans

- Gather user feedback
- Implement new features
 - GPS location based alerts
 - Hydro data
 - Improved alert criteria options
 - Alert based on NDFD forecast
- Develop for other mobile platforms
- Improve mapping capabilities and web services for spatial data.
- Migrate to high availability architecture



Questions? Ideas?

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